High-Average-Power Frequency-Doubled Nd:YAG Lasers

Provides state-of-the-art, high-average-power, short-pulse visible lasers

LLNL's high-average-power frequency-doubled Nd:YAG laser.

The Isotope Separation and Advanced Manufacturing (ISAM) Technologies program at LLNL has developed pulsed Nd:YAG lasers that can deliver average powers approaching 100 watts at the 532-nm, second-harmonic wavelength. These lasers can operate at high repetition rates, ranging from one kilohertz to several tens of kilohertz. They are high-power-lasers used for a wide range of industrial materials processing applications. In addition to higher output power, our ISAM Nd:YAG laser can generate considerably shorter pulses than other lasers that are currently available.

The ISAM program uses its Nd:YAG lasers to pump dye lasers and titanium:sapphire lasers currently being used for isotope separation, materials processing, and for generating a laser "guide star" (to correct for atmospheric-turbulence-induced distortions to the images produced by astronomical telescopes). The higher-power ISAM-developed lasers are an attractive prototype scale up for commercial lasers now widely used in scientific research as pump lasers for ultra-short pulse titanium:sapphire amplifiers.

APPLICATIONS

- *Industrial laser materials processing*
- *Medical isotope separation*
- *Pump lasers for scientific research*

Availability: The Laboratory is actively seeking industrial partners to work with us in further developing and commercializing this laser technology as well as finding additional industrial utilizations.

Contacts

Gaylen Erbert
Phone: (510) 422-9986
Fax: (510) 423-3143
E-mail: erbert2@llnl.gov
Mail code: L-463

Isaac Bass
Phone: (510) 423-8389
Fax: (510) 423-3143
E-mail: bass1@llnl.gov
Mail code: L-462